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THE ZOOLOGIST:

A

POPULAR MONTHLY MAGAZINE

OF

NATURAL HISTORY

AND

JOURNAL FOR RECORDING FACTS & ANECDOTES

RELATING TO

QUADRUPEDS, BIRDS, REPTILES, FISHES, ANNELIDES,
INSECTS, WORMS, ZOOPHYTES, &c.

THEIR HABITS, FOOD, RETREATS, OCCASIONAL APPEARANCE,
MIGRATIONS, NESTS AND YOUNG.

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Note on the Reproduction of the Frog (Rana temporaria). — Mr. Lowe's paper in the 'Annals and Magazine of Natural History' (see Zoöl. 3871) having attracted considerable attention, as the startling novelty of the positions laid down by him would naturally lead one to expect, I have waited patiently for some person more competent than myself, either to refute or satisfactorily corroborate such statements. With the exception however of Mr. Alfred Merle Norman, who has come forward in support of the fifth position, and Mr. Newman's very prudent and properly cautious observation at the end of Mr. Norman's statement (Zool. 3913), I see no remarks in reference to the matter. I therefore think I am bound to state that I can in many respects corroborate Mr. Lowe's and Mr. Norman's statements as to the reproduction of frogs without the presence of water; which I do, not giving any opinion on the doubts suggested thereby, but merely to aid the inquiry, in accordance with Mr. Newman's permission granted in the observation above mentioned. I had a wine-cellar, about 10 feet by 8, at the end and leading out of a back kitchen, below the level of a small garden, situate in the High Street in the midst of this town. There was only one door to the cellar, and one small window, opening on a little square space with a railing over it upon the level of the garden, the path of which was flagged with large paving-stones. I had a wooden shutter fixed on the inside of my cellar, to increase the facility of obtaining an equable temperature for the wine, and which was constantly kept up and fastened. I found some large frogs in it the first year I went to the house; these I had taken out and the cellar thoroughly cleaned. I am quite sure no others could have obtained access thereto through the window, and, of course, they could not through the two kitchens; yet, to my great surprise, the next year I found frogs in considerable numbers and of different degrees of size, some very small. They were again got rid of in like manner, and the cellar cleaned; but the same occurrence happened the next year. There was no saw-dust kept, the wine being packed on laths. I never could account for this, and leave it for any suggestions the readers of the 'Zoologist' may make on so generally interesting a subject.—*John Garland ; Dorchester, June* 20, 1853.

Capture of the Spiny Cross-fish (Uraster glacialis) *in Dalkey Sound, Ireland.* — I have to record the capture in Dalkey Sound of the spiny cross-fish (*Uraster glacialis*, Linn.) The specimen was taken on the 19th instant, in a lobster-pot; its dimensions were as follow : — Length of rays in inches, 6¼, 7½, 8, 7¼, and 6½; first and second rays, from eye to eye, 15 inches, third and fourth 16¼ inches: disk, 1 inch by 1 Colour : — back of rays bluish green, with purple patches; around the eyes and ends of the rays purplish ; spines at end of rays purplish, near the disk white at their tips, at the base bluish green. In Forbes's 'British Star-fishes' I find this species recorded as occurring only on our western shores, if we except Belfast; I therefore thought this notice of its occurrence so far East would be acceptable to some of the readers of the 'Zoologist.' The specimen is at present in my possession, and is intended to be placed in the collection of the Dublin Natural History Society.—*John Robert Kinahan ; Sea-view Terrace, Donnybrook, June* 22, 1853.

Occurrence of Muller's Top-knot (Rhombus hirtus) *in Dalkey Sound.*—I have also to record the occurrence of Muller's top-knot (*Rhombus hirtus*), captured in the same place on the 21st instant. The specimen was 5½ inches long, and has been presented to the same collection.—*Id.*

Capture of Diphthera Orion in Hampshire.—I have just had a fine specimen of this rare and beautiful moth presented to me by a young lady. It was caught last night by her maid, without being injured. I have never heard of its capture in Hampshire before.—*William Henry Hawker ; Horndean, Hants, June* 14, 1853.

Short Extracts from a Journal of a Voyage made to Central America in 1852. By JULIAN DEBY.*

I LEFT Antwerp on board the brig Plantin, bound for La Guayra Venezuela) and St. Thomas de Guatemala, on the 21st of February, 852. My intention was to have travelled over a great portion of Central America; but, as I shall further relate, the unsettled state of he country, and severe fever, ultimately drove me home much sooner han I had anticipated. However, being now restored to health, and my spirits unabated, I am determined to recommence my expedition ery shortly.

Believing that a few rough and imperfect notes from my journal, n subjects of Natural History, may be agreeable to the readers of the Zoologist' (some of whom will perhaps recollect my name), I forward he following extracts for insertion in that journal, should you deem hem worth reading. The present portion treats only of the few obervations I made at sea; in those which are to follow I shall briefly elate my subsequent proceedings on land, which, I believe, will be ound more interesting.

On the 25th of February, in lat. 47° 16′ N., long. 9° 22′ W., havng hung a small net behind the vessel, I caught several Sagittas, and large number of Noctilucas. The first of these, viewed under the microscope, is a singular hermaphrodite animal, the classification of which is very difficult to establish. I distinctly saw the zoosperms moving briskly in the ovaria. The Noctilucas, which are the principal agents of the phosphorescence of the sea in our temperate regions, re very certainly Infusoria, with a flagelliform articulated swimming-pparatus: the radiated lines seen in them, and which by some naturalists have been looked upon as traces of a nervous system, according o my views are nothing else than external elevated lines, which disppear on the slightest pressure. These small and delicate animals main by thousands at the bottom of the net, forming a jelly-like ass, which, on turning the net inside out into a large tumbler full of a water, immediately swim about slowly (having the appearance of all transparent bubbles, of the size of a pin's head), and may be llected separately for observation under the microscope, by means

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* Hoping some day to publish a complete account of my voyages and travels, I t be excused for not entering here into scientific details of all I observed.—*J. D.*

BRITISH MUSEUM

of a small glass tube, or even with a common pipe-stem, the finger acting as a kind of valve on the top or open end of the tube.

Feb. 29: (lat. 36 55; long. 15 56). I was called out of the cabin to see some "Meerswein" (sea-pigs), which were swimming in front of the ship, passing and repassing with incredible velocity before the stem of the vessel. As well as I could distinguish, I took them for the common dolphin. Having made myself fast to the bowsprit, I tried to harpoon one of them, but my awkwardness only served to frighten them away.

March 1: (lat. 34 18; long. 17 54). I saw today, for the first time, the beautiful Portuguese man-of-war (*Physalisa pelagica*). This singular animal, with its silvery, pink, and violent tints shining in the sun on the blue sea, is to me one of the most beautiful of ocean sights.

March 2: (lat. 31 49; long. 20 28). Saw some more dolphins and numbers of Physalisa, which latter animal I continued to observe during nearly the whole of my voyage.

March 4: (lat. 27 8; long. 25 12). We have entered the region of Fucus natans, *L.*, (Sargassum vulgare of modern botanists); small patches of which are floating here and there around the vessel. According to Meyen, this plant is found from 22° to 36° N. lat. and from 25° to 45° W. long. I collected some specimens, all of which exhibited evident marks of decay. This is the well-known plant described by all navigators since Columbus; and called by the French navigators, "Raisin du Tropique." On my return home, I had occasion to pass through the Bahama field of Sargasso, which is noticed by Humboldt and other naturalists. I caught a gray-coloured parasitical Entomostracan, of the family Caligidæ, of which I made a microscopical drawing: it was swimming freely in the sea.

March 5: (lat. 25 32; long. 26 43). I have collected a few animals on some floating masses of Sargasso; the most remarkable of which is a brown nudibranchiate mollusc, with four branchial appendages on the back and two on the head. The sailors called it a "sea-horse," from the appearance of its head. Being without the necessary books, I cannot determine the species. On the same seaweed I found some small crabs, and a beautiful and delicate species of a compound Campanularia, each specimen of which bore from three to ten individuals. The total length of the whole polype was a quarter of an inch; the arms of each individual in one row, and about twenty in number.

March 7. Passed the Tropic and saw a shark. I saw several very small flying fish, (*Exocetus mesogaster*, Cuv., or *Hillianus*, Gosse?);

they looked like small birds, but, glittering in the sun, presented a singularly airy aspect, their fins becoming nearly invisible.

March 8: (lat. 21 57; long. 32 13). The sea is most beautifully phosphorescent this evening; thousands of sparks — some yellow, some green, some red, and of different sizes—are shining in the white spray caused by the ship's rapid course through the waves. The sea near the vessel has the aspect of a black sky, on which are floating fleecy snow-white clouds, through and around which hundreds of stars are twinkling with surprising brilliancy. The clear moon, on rising, puts out the animated stars of the ocean, and at the same time eclipses the light of the celestial ones; Venus alone, throwing on the waters her long ray of silvery glow, does not shrink before the glaring disk.

March 9: (long. 33 23; lat. 21 15). Four large Cetaceans passed slowly alongside our vessel: their length was about 20 or 25 feet; the back and hinder part of the very convex head were alone out of the water, the blow-holes very far back; the back was dirty brown, the nape and head being grayish. These animals blew the air through their spiracles, so as to produce a loud snorting sound, but did not eject any water. They were, I believe, some species of Globicephalus, perhaps G. fuscus, which is unknown to me otherwise than by name.

March 10: (lat. 20 31; long. 36 54). I fished up two pretty Medusas, of the family Oceanidæ, about 2 inches long, with vermilion-coloured nucleus; also some fine specimens of Velella, which were floating in great numbers on the surface of the calm sea, in company with Physalisa. These singular Siphonophoræ are of a fine blue colour when living, but change to yellowish brown in spirits. I believe I can distinguish two species, by their size and the shape of the dorsal cartilaginous plate: the smaller one having it triangular; the larger, oval-oblong. The Velella can float on its back, making use of its under side (as would a gasteropodous mollusc of its foot), so as to form a vacuum: it is, however, generally seen with its carina uppermost. Empty shells of Spirula are common, floating on the surface of the waves; as also a fine species of compound Salpa, with blue nucleus.

March 12: (lat. 19 45; long. 37 32). Many large flying fish (*Exocetus volitans*) appeared today. Several small white birds were observed at a distance, but did not come near enough to be recognised.

March 13: (lat. 18 44; long. 39 21). Exocetus volitans very frequent. I still see patches of Fucus natans; this is more than three degrees further South than is indicated by botanists. I caught a small isopodous Crustacean, of a shining steel-blue colour; the caudal respiratory lamellæ were in perpetual motion. I also fished up in a bucket of water a luminous amphipodous Crustacean.

March 14: (lat. 17 13; long. 41 35). Flying fish numerous. I ascertained, by frequent observations, that these animals can make one turn, right or left, whilst flying, using their tail to direct their course, much in the same manner as a bird does, or like the rudder of a ship.

March 17: (lat. 12 55; long. 42 30). Caught a small Physalisa, which appears distinct from the common species: its size is five times less; the smaller tentacula are of a clear yellow colour; and a thin, membranous, wing-like dorsal fin occupies the upper part of the swimming-bladder. I also collected a beautiful sky-blue Medusa.

March 18: (lat. 12 56; long. 42 11). Thousands of small globular gelatinous masses (Medusæ ?) are floating at different depths in the clear and calm water, following the direction of the great ocean-current. They are so delicate that I find it impossible to take them in my net without destroying them.

March 22: (lat. 12 48; long. 49 53). A petrel hovered over the ship this evening at dusk; it looked like a large bat, so fantastical and noiseless were its evolutions. Flying fish of the two species have been numerous all day.

March 26: (lat. 13; long 50 28). This evening a noddy (*Sterna stolida*) came on board, and was caught by the hand. This bird is well known to all navigators on account of its stupidity, *i. e.*, its fearlessness of man. We passed in sight of the island of Barbadoes today.

March 27: (lat. 12; long. 61 44). After passing the island of Carriacou and some of the Grenadines, we sailed along the eastern side of the most beautiful island of New Granada. Between the vessel and the coast a flock of at least a hundred small dolphins were frolicking. They were following each other in Indian file, jumping out of the water fifteen to twenty at a time, exhibiting their white and shining bellies: none came near the ship. Two or three larger whales were slowly swimming in a small bay, loudly spouting up water ever and anon to a considerable height. From the deck, this seemed to disperse into the air, just like a jet of steam allowed to escape from the valve of an engine-boiler. Divers birds, among which the most remarkable to a stranger's eye was Phaëton æthereus, visited our vessel.

March 28: (lat. 11 37; long. 63 34). A few birds flying in the distance, and some jets of steam thrown up by a whale, are the only signs of life I can discern this morning. In the evening we are just opposite the dark rocks of Los Hermannos, behind which the sun sets gloriously; large birds are slowly winging their course towards their resting-places on these small islands. Taking my evening bath on deck, in a large barrel of sea-water, I was surprised to find it full of phosphorescent animals, which were creeping all over my body.

March 29: (lat. 11 10; long. 69 12). Today I enjoyed a beautiful sight which highly interested me; thousands of beautiful blue bonitas (a large and well-known fish) were pursuing shoals of flying fish and other small fry. Innumerable flocks of sterns, Phaëtons, and many other birds, accompanied them and disputed their food. As soon as the bonitas, leaping out of the water, and lashing loudly in all directions in their eagerness to seize their agile prey, produced on the surface of the sea a white and foaming spot, some bird, soaring on high, would perceive them, and, uttering a loud cry, call all its feathered companions to the feast. In a minute the scene was indescribably curious: the bustle of the birds, splashing into the water in the midst of the bonitas, and all screaming and yelling together, reminded me of a yard where different kinds of poultry are fed on a small quantity of grain, which they are all eager to make the most of in as short a space of time as possible. We passed in sight of the flat, inhospitable, and uninhabited island of Tortuga.

March 30. This morning we came in sight of the mountains of the Sierra de la Costa of Venezuela. Plantations of cocoa-trees, Phœnix, Indian corn, sugar-cane, &c., were stretched along the coast, the rocks above being covered to a considerable height by a forest of gigantic candelabra-like Cactuses, from 20 to 30 feet in height. In the afternoon we reached La Guayra, and cast anchor. This town has a singular aspect: it is spread out along a narrow slip of land, between the rocks and the sea, and is backed by steep and dark mountains, several thousand feet high, the most elevated of which, according to Humboldt, is the Scilla. A walk I took in the evening on the strand, procured me the pleasure of seeing some plants for the first time in a wild state. Amongst them were large quantities of Argemone Mexicana, in full blossom, the immense Cactus (*C. Peruvianus?*) already spoken of, Cereus triangularis, a pretty leafless Euphorbia with red flowers, the true cotton-tree, cocoa-nut trees, bananas, and many others. In the Posada de Neptuno, where I have taken lodgings, I was pleased to see, cultivated in pots, and with great care, a plant of Plantago major, and some of our common roses. It is difficult to express the pleasure felt by the naturalist at seeing even a common and ugly plant of his native land, cultivated so far from home; it immediately brings to mind associations of country strolls in our colder climes, of the green orchard where we romped in our boyhood, of the lane of our village where we were wont to dream on sunny evenings, and pick a spike of plantain-seeds for our sister's canary-bird; such sensations can only be felt — they cannot be described. Mosquitos are not numerous at La Guayra, so that I could sleep with all my windows open, and without a mosquito-net. The European vegetables are eaten here, being cultivated round Caraccas, where the temperature is much lower. Many pigs, of a dirty gray colour, long in shape, very flat on the ribs, very hairy all over, and with thin crooked legs, are running about the streets; and many may be seen in the huts of the negroes, living *pêle-mêle* with men, women, squalid children and screeching parrots. These pigs, when of a good size, are worth 5*s*. each. Ox-meat sells at about 3*s*. the five-and-twenty pounds; it is brought to market from the Llanos of the interior. Sharks are very numerous on this coast; and I cannot understand what led Humboldt to state that they are not dangerous here, as they are very much dreaded by all the native sailors and boatmen, and accidents caused by them are numerous. Walking, or rather clambering, around the place next day, I saw some small humming-birds, numbers of the Caraccas vultures flying in pairs, turtle doves, and small yellow-banded and green-chinned lizards. I found in the gneiss a vein of quartz, containing blue carbonate of copper, and a substance which looked much like Halloysite.

April 1. I hired a mule to go to Caraccas. I followed the old road over the mountains, so well described by Humboldt; a new one has since been made, which takes a long circuit round the mountains, so as to follow the valleys. On the way I noticed a beautiful plantation of cocoa-trees near the sea-shore; and as I ascended the steep and tedious path, which winds irregularly up the mountain side, I was delighted with the singing of birds: turtle doves of two kinds ran familiarly before me on the road. I first passed through the forest of Cactuses, among which were numerous fine Mimosas, Agaves, &c. As I ascended, the air became cooler, and small forms of ferns and Lycopodiaceæ were common; also a pretty Gesneria, some Melastomas, a Bignonia, a large Arum, a Tradescantia, a Pteris, or something that looked very like our P. aquilina; a small yellow-flowered Oxalis, and a delicate pink-coloured terrestrial Orchis, also attracted my attention. I remained two days at Caraccas, visiting the town and its environs; a description of all I noted there would lead me too far for this paper. Everything interests one in these distant lands. In a walk through the market-place, I saw conical loaves of brown sugar, cochineal, skins of the jaguar and of tiger-cats, black beans (*frijoles*), bananas, plantains, pine-apples, living peccaries led by tawny Indians, fresh-water Cheloniæ sold by more than half-naked negroes, stinking meat spread out under small, hot, wooden sheds, &c. &c.; all these things forcibly impress on the mind of the stranger the fact that he is far indeed from old Europe, and that he must be wide awake to observe all worth noting as curious, interesting, or instructive to himself or others.

On the 6th of April we again embarked, doubled Cape Blanco, and then lost sight of land.

April 7. Passed the islands of Buenos Ayres and Curazao, and saw the mountainous outline of Oruba. Small flying fish numerous.

April 8: (lat. 14 25; long. 76 16). Saw today, for the first time, the large flying fish with black pectoral fins (*Exocetus Noveboracensis ?*), noticed by Mr. Gosse in his most interesting work on the Natural History of Jamaica, a book which I took out with me, and which made many hours pass very agreeably that would have appeared long and dreary without so lively a companion.

April 9: (lat. 19 51; long. 79 10). Large patches of Sargassum are floating around us; it is very long since we saw any. Smaller flying fish numerous.

April 11. A Tringa came and rested on board.

April 12. Passed near the Santanilla, or Swan's Island, a small, low, sandy, arid, uninhabited and dismal bit of land. A few sea-birds and shrubs are the only living productions of this island. In the night, a small shoal of porpoises surrounded the vessel: they announced their arrival by loud, short, and frequent snortings, and left long, luminous, phosphorescent tracks in the sea wherever they passed. The island of Santanilla was wrongly marked on my map and on the captain's: we compared our observations, and found it to lie in long. 83° 51′ W., and lat. 17° 25′ N.; whereas on my map it is placed in long. 84° 10′ W., long. 17° 15′ N. The island being low, vessels might easily be grounded on it during a dark night.

April 13. After passing the Zapotilla Kays, near which the sea was covered with circular brown Medusæ, and doubling Cape Manabique, we entered the fine Bay of Sto. Thomas de Guatemala, having safely crossed the Atlantic in fifty-three days. In a future paper, I shall continue to note such of my subsequent proceedings on land as may appear likely to prove interesting to the readers of the 'Zoologist.'

JULIAN DEBY.

Bloquemont, May, 1853.

Notes on the Habits of some Species of Bats.

By JONATHAN COUCH, Esq., F.L.S., &c.

THERE are no British animals of the distinctive habits of which so little is known as the bats. It is not even a settled question whether any of them migrate from us in the winter; whether they change their quarters according to the seasons; or to what extent they are influenced by the variations of the atmosphere.

From these considerations, at the season of the year when these creatures appeared to be beginning to feel the influence of the shortening days and an alteration of temperature, I began to keep a journal of their appearances; and in doing this, I beg to remark, that when I have noted the absence of bats, it does not simply mean that they have not fallen in my way; but that they were carefully sought for in situations where, if they were to appear at all, they were most likely to be found.

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September 4. Bats not seen: evening calm, but overcast.

September 5. No bats: evening clear and fine. This evening is so far favourable for them, and so quiet, being Sunday, that I can only suppose they have taken new hunting-ground, which probably they often do.

September 6. At T—— (2½ miles from the coast), an ancient castellated mansion, where, from former knowledge, all the bats appear to be of the horse-shoe species. They are on flight in good daylight, and fly more rapidly than bats appear to do elsewhere. I find them flying about half a mile from what must be their resting-place. I saw only one near my home (near the coast), although the place is more sheltered from the wind. Wind N.W., and a little chilly.

September 7. Only one bat seen, for a moment, in the Warren near the sea. Wind N., showery and chilly.

September 8. One bat, only seen for a moment at a distance; none where they are usually abundant. Wind N.E., mild and showery.

September 9. No bats: fine evening; wind N.E., mild and overcast.

September 11. One bat hovering for a short time: evening fine, calm; wind N.

September 12. No bats: calm and overcast.

September 13. Bats flying at T——, and a couple flying in the hall, which they not unfrequently enter in autumn. A fortnight since, a young one, of the small horse-shoe species, was caught in a bed-room in the house. This evening they are flying to the distance of half a mile from the mansion: evening fine and calm. A gentleman living there informs me, that a few days since he saw bats flying near his window between 2 and 3 o'clock in the morning, when quite dark.

September 14. Bats common in flight at Looe. I find that horse-shoe bats are common there. Some of them make their homes in an adit of an old attempt at mining at Penrock, near the sea; but they are not found suspended close together. Four or five were found, not torpid, in the cold weather of a former winter: the weather at that time was cold in the open air, but sensibly warm in the adit. I examined two specimens of Vespertilio Nattereri, and one of V. Pipistrellus, caught at Looe.

September 16. One large bat flew straight and quick over the upper end of a garden on the side of a steep hill, a little after 7 o'clock, and did not return. Weather calm, fine, feeling rather cold.

September 17. No bats. Wind S.E., blowing rather strong, with flying showers.

September 18. One bat seen in the Warren: a very wet day.

September 19. No bats seen after a short search.

September 20. At T——. Bats, believed to be the horse-shoe species, flying early in the evening, near the ground, on the sheltered side of the mansion; none elsewhere. Weather fine, windy; moonlight.

September 21. One bat seen hastily: fine evening.

September 22. No bats: weather very fine.

September 23. One bat seen in the morning, between 5 and 6 o'clock; and one in the evening, which flew rapidly from the Warren towards a cove in the sea-cliff, and did not return. Weather fine but cool.

September 24. No bats: fine evening; bright moonlight.

September 25. One bat, appearing of larger size, flying high and straight over the tops of trees in a plantation; afterwards one, probably the same, flying high over the street in large circles. None seen among the houses, where, in summer, the small bats are numerous. Weather fine.

September 26. One bat, in a glade in the side of a hill. It took long and straight flights, which might have proceeded from the scarcity of prey. Once or twice it flew in among the leaves of an ash-tree, as if seeking something on or among the foliage. I remember once, in broad day-light, to have seen a long-eared bat (*Plecotus auritus*) come close to where I was standing, and take something from the surface of a leaf: probably this one is of the same species, for the size appears the same. If so, it may show one use of the long ears, which may act as organs of quick sensation, as it flies among leaves which stand thick on the tree.

September 27. A few, flying low, at T——, near the mansion; none elsewhere. Weather overcast, with a brisk North wind.

September 30. In the Warren. One bat, in a rapid and transitory flight; seen but a short time. Weather calm and cloudy.

October 1. No bat: evening calm.

October 4. No bat: heavy rain all day.

October 5. No bat: showers.

October 6. At T——. No bat: weather fair.

October 7. At a village in the country and homeward. No bat: weather overcast.

October 8. In the Warren. No bat: weather fine but cold.

October 9. One bat flew once in a straight line along the tops of a line of elms in a plantation: evening fine.

October 11. No bats.

October 12. Early in the evening, one bat, of large size, seen flying high, and passing quickly from place to place, at considerable distances apart. Another in the Warren, seen only for a short time: none seen later. Weather fair, wind E.

October 14. One bat in a sheltered place: wind E. and strong.

October 15. A small bat flying in repeated circles about one station, a little sheltered: wind strong.

October 16. A small bat, like that of the preceding evening, probably the same, flying at the same place, in moderate circles, but not remaining long in one place. I think it makes the circuit of the town. Its fare must be scanty. It is incommoded by the wind, which is East, and strong.

October 17. Several bats early in the evening, flying high; one of them small: all flying in circles. One flew near me in a plantation of trees, passing through the foliage backward and forward. Gnats abundant. I am informed that there were also several near T——. Weather calm and mild.

October 18. Bats abundant, as in a summer evening; some flying low: weather fine.

October 20. No bats: weather changing to wet.

October 21 and 22. Very rainy evenings.

October 23. No bats: damp evening.

October 24. A few bats, of small size: cloudy and calm.

November 1. Bats flying: rainy evening, with thick mist. The weather has been very wet and windy for a week.

November 5. One bat seen in the evening: rainy and cold.

November 6. No bats: much rain and wind.

November 7. No bats: rainy. Rain every day.

November 12. No bats: high wind.

November 13. Severe rain.

November 14. Several bats, some of a larger size, and flying rather high: windy, cloudy, and disposed to rain.

November 15. No bats: cloudy and disposed to rain.

November 19. Bats flying rather high, on a sheltered side of a hill: cold showers.

November 21. No bats: brisk North wind after a rainy day.

Days and evenings following very wet, and generally stormy.

November 27. No bats: slight showers, and chilly.

December 6. No bats: evening overcast. From the time of the last note, the weather has been generally rainy, with wind in the evenings.

December 8. No bats: showery.

December 12. Bats, of small size, flying high and rapidly in a sheltered place: wind rather high, overcast.

December 25. No bats: wind moderate, overcast.

December 26. No bats: windy. Very stormy evenings.

December 29. No bats: overcast.

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January 2. No bats: weather windy.

January 5. No bats: weather mild.

January 9. Two bats flying actively: weather clear.

January 10 to 12. Stormy.

January 14. No bats: overcast, and slight rain.

January 20. No bats: mild, slight clouds.

January 23. No bats: clear, cold, wind North.

January 26 and 27. No bats: cloudy, cold, wind East, frosty.

January 30. No bats: weather moderately fine.

February 1. No bats: cloudy, with some wind.

February 6. No bats: clear, frosty, thermometer 41°.

February 16. No bats: the weather has continued with smart frost, wind N.E.

February 17 and 18. No bats: sharp frost, thermometer 33°.

February 22. No bats: weather milder, slight showers, wind N.

February 26. No bats: windy from N.W., chilly.

March 3. No bats: fair, slight wind from the North.

March 5. No bats: overcast, wind N.W.

March 6. No bats: a thick wet mist.

March 7. One bat at T——, near the mansion: weather calm, fair.

March 8. One or two appearances of bats; a momentary flitting: one on a secluded side of a hill, with trees: weather fair.

March 9. No bats: weather overcast.

March 10. No bats: wind South and brisk, overcast.

March 12. No bats: windy, with clouds.

March 14. No bats: showers.

March 19. No bats: clear, with smart frost; wind East.

March 21. No bats: cloudy, slight snow-showers; wind North.

March 22. No bats: clear, frosty; wind N.E.

March 26. No bats: clear, frosty.

March 27. No bats: clear, cold.

March 28. No bats: fine evening.

April 1. Bats flying: wind West.

April 2. No bats: showery; wind S.W.

April 4. No bats: rainy evening.

April 6. Bats: a damp mist.

April 7. No bats seen in the place where I saw two on the 6th, but one seen in the Warren, where none have been seen for a long time.

April 8. No bats: weather clear, cool; wind North.

April 9. No bats: cloudy; wind W.N.W.

April 11. One bat, flying along the lane near T——, the first seen in any situation that is not much sheltered: weather fair and clear; wind North.

April 13. No bats along the road from T—— and home: weather fine but cool; wind N.E., and a cold day.

April 14. No bats along the same road: cold, wind N.E.

April 15. No bats: overcast, slight wind from the North.

April 16. No bats: overcast, wind W.N.W.

April 17. No bats: overcast.

April 18. Bats more numerous than I have seen them for the season, appearing early in the evening. One large one flew rapidly straight along, and did not return: it is the first of this size I have seen this season. Weather cloudy, calm; wind light from S.W.

April 19. One bat: cloudy, wind N.W.

April 20. No bats: rainy, cool evening.

April 21. Bats: light showers, and mild.

April 22. One bat, in a sheltered place; showers through the day, in the evening wind North, and cloudy.

April 23. Bats flying: wind W.N.W., cool.

April 25. No bats at T—— and homeward: evening cold.

April 28. Early in the evening a bat flew straight outward through our harbour from the town, to Scilly Cove, and did not appear again. Later in the evening bats were numerous, in places long forsaken by them, flying in long curves. Weather mild and cloudy.

From this time the bats have resumed their summer habits, but seem still influenced by the weather, as on: —

May 7. No bats: cold showers, wind North.

May 11. No bats: clear, cool, wind N.W.

May 16. Bats now take long and active flights, and in such numbers, as to show that hitherto those which have appeared could only have been a small proportion of such as lay hid. With such frequent and long interruptions of flight, is it possible to suppose that the chief part of their sustenance can be obtained on the wing?

May 20. No bats: a fine evening, calm and warm, bright moonlight. I observe that bats do not continue to fly later when the moon shines brightly, but their absence this evening is remarkable.

May 21. Bats flying, but they disappeared earlier than usual; I saw none after the moonlight prevailed over the day. A fine evening, wind East.

May 30. No bats: yet the evening is fine and calm, although yesterday, when the weather was cool, and the wind East, bats were in flight.

June 5. Only one bat seen for a moment, after 9 o'clock: weather calm, overcast.

The following notes from other parts of my journal will further tend to illustrate the habits of different species of bats.

January 11. A specimen of the larger horse-shoe bat brought to me, taken as it was in flight, and proving that this species does not leave us in the winter.

Several specimens of the lesser horse-shoe bat have come into my possession, and I observe that both the ears and horse-shoe membrane on the nose are very sensitive and movable. The weight of one specimen was 77 grains, of another, 74 grains, of another, 73 grains; extent of wing 9 inches and 3-tenths. When at rest, this species turns up its tail over its back: it is exceedingly beautiful when closely folded up in its wings.

Long-eared Bat.—December 21, a specimen found abroad, attached to a wall. May 24, one was on flight at half past 3 o'clock in the afternoon; its flight heavy and with labour. April 25, at half past 9 in the morning, one hawking for flies in bright sunshine. On being pursued it became confused, and was caught: in captivity it rose from the ground with great facility. Extent of wings, 10½ inches; weight, 95 grains.

Vespertilio emarginatus. — A specimen weighed 97 grains; extent of wing 10½ inches.

Pipistrelle.—I find the extent of wing to vary from 7 inches to 8½, and the weight from 42 grains to 55. There is also a note of one with the extent of wing 7$\frac{3}{10}$ inches, which weighed 93 grains; but this I imagine to be a mistake. A friend observed of one to which the young ones were attached, that they were separated from the teats with difficulty, and that when separated, they were not again able to lay hold of them: and the old one then seemed quite indifferent to her young, running over them without care.

February 10.—One of this species was seen on the wing at 1 o'clock in the day, with the weather bright, appearing much at its ease. It came from a cove in the sea-cliff.

In July, twenty-eight of them were discovered, congregated together in a square hole in the wall of a mill; they were all of one species, but differing in size and colour. The smallest weighed 40 grains, the largest 83; colour of the former very dark, the fur less so than the membrane; colour of the old ones much more fulvous. They made a stridulous noise when irritated, or when creeping over each other; the sound being uttered with a jerk, with the mouth thrown widely open. When left at rest they huddled together. One of the smaller ones held on by the teats of the dam until she escaped from its hold.

August 30, at half-past 5 o'clock, the sky clear, with a bright sun, a bat, probably of this species, mounted high in the air in pursuit of food; and whilst engaged in this occupation it was seen by a swallow, which immediately gave chase to it. The swallow persecuted this little animal by repeatedly striking at it, and followed it closely, until at last the bat was compelled to descend for shelter near to the houses. But when the persecutor appeared to have withdrawn, the bat boldly mounted again to the upper region of air; there, however, it was soon discovered by the swallows, two or three of which now joined in the persecution, and ultimately forced it again to descend to a place of safety. For the third time it mounted aloft, and there turned and dipped after its prey, but was again discovered; and now, as if in resentment of its daring invasion of their territories, a little host of swallows gathered about it, and strove to strike or drive it down. But this was not soon or easily accomplished; the bat appeared determined to enjoy some of the good things to be obtained in its unusual elevation, and it was a considerable time before it was finally obliged to seek its shelter among the houses. I could not help admiring the courage, as well as agility, which the little flutterer exhibited on this occasion.

JONATHAN COUCH.

Polperro, June, 1853.

Note on the Song of the Willow Wren and Chiff-chaff.—A curious circumstance came under the observation of Mr. Vingoe yesterday, which he has reported to me, respecting the song of what he considers to have been a chiff-chaff. It consisted of the usual passages of both its own chirp song, and the modulated cadence of the willow-wren. It commenced with the "chip, chop" notes, but these passed gradually to the song of the willow-wren, but the blending of the two songs was different at times, sometimes the performance being confined to one without the other, at others united, but the notes peculiar to each species were, when uttered, distinct and specific.—*Edward Hearle Rodd; Penzance, May* 23, 1853.

Note on the Copulation of Swifts.—There is an observation in White's Selborne (Letter 61, to Daines Barrington), relative to the way in which sexual intercourse takes place amongst the swifts, the author firmly believing that it is effected while on the wing. He says, "The fact I would advance is, that swifts tread or copulate on the wing; and I would wish any nice observer, that is startled at the supposition, to use his own eyes, and I think he will soon be convinced." A little further on he continues:—"If any person would watch these birds of a fine morning in May, as they are sailing round, at a great height from the ground, he would see, every now and then, one drop on the back of another, and both of them sink down together, for many fathoms, with a loud piercing shriek. This I take to be the juncture when the business of generation is carrying on." This observation of the worthy old historian of Selborne, is one that appears not to have been noticed by subsequent writers. I have searched the works of Temminck, Degland, Keysorling and Blasius, and, among our own writers, Montagu, Fleming, Selby, Jenyns, Yarrell, Thompson, and Morris, without meeting with any comment; but the late Professor Macgillivray, in his admirable work on British birds, has the following remarks:—"Such phenomena certainly present themselves, yet it is not by any means improbable that they are merely indicative of the hostility of rival males, for we often see larks fighting in the air, and so keenly engaged, that they sometimes descend 'many fathoms' before separating; and I have observed eagles struggling on wing, and emitting 'a loud piercing shriek,' although no one could reasonably suppose them to be then copulating." It is quite evident that none of these writers have ever observed what White alludes to, or they would neither have passed it over in silence, nor yet supposed it to be the rivalry of males. On the

25th of May, this year, I had an opportunity of noticing a manœuvre, the nature of which I had no difficulty in deciding upon. Two swifts, at a great height, were chasing each other and uttering loud screams, an evident attempt being frequently made by one to settle on the back of the other. This was repeated a great many times without effect, for the female contrived to flutter from under the other in a playful manner. At length, however, she suddenly extended her wings, keeping them perfectly quiet and motionless, and in a moment the male alighted softly upon her back, with his wings distended perfectly flat, and so exactly fitting upon those of the female, that I could not have known it was more than one bird, had I not been watching them before. In this manner, they descended in an oblique direction for a great many yards, the wings all the time quite motionless, and both quite silent. After separating, they pursued their usual avocation of feeding in a most business-like and orderly manner, not troubling themselves to toy or play, or to utter their well-known screams. I feel not the least hesitation in deciding that White was perfectly right in his supposition respecting the copulation of the swift; but, at the same time, I feel quite confident that it can be accomplished on the wing in perfectly calm weather only, as a very moderate wind, in the instance recorded, would have rendered it difficult, if not impossible.—*Robert F. Tomes ; Welford, Stratford-on-Avon, June* 4, 1853.

Note on the supposed occurrence of the Apteryx in Anglesey, and on the capture of Galbula ruficauda in Lincolnshire.—In common, I doubt not, with the other ornithological readers of the 'Zoologist,' I had hoped that Mr. Browne's remarks (Zool. 3845) on Mr. Spode's communication (Id. 3815), relative to the supposed occurrence of an Apteryx in Anglesey, would have led the latter gentleman to have favoured the public with some further particulars of a circumstance which, if the account given be a correct one, would certainly be an occurrence of almost unprecedented ornithological interest. I would respectfully suggest that the claims of science, and of that accuracy which is the only true basis of science, imperatively demand that the following particulars should if possible be ascertained and published; namely :—

1. The exact species of the bird in question.
2. The name and address of the person who shot it.
3. The name of the parish where it was killed.
4. The exact date when it was killed.
5. The name and address of the person who stuffed it.
6. Whether any note was taken of the sex of the specimen, or of the contents of the stomach.
7. Whether anything was observed as to the habits or movements of the bird at the time it was shot.

And I trust that Mr. Spode will kindly exert himself to procure, for our information, such additional evidence as will enable him to supply these desiderata; by doing which he will establish a claim to the sincere thanks of his fellow ornithologists. I take this opportunity of adding a few short remarks on Mr. Tristram's very curious notice of the occurrence of a specimen of Galbula ruficauda in Lincolnshire, (Zool. 3906). I certainly consider this notice as one of very great ornithological interest, and only regret that Mr. Tristram should have been induced, by any consideration, to delay its publication. Will that gentleman allow me to suggest, as a fellow-contributor to the 'Zoologist,' that he has set us rather a bad example in this respect?—as it is obvious that the more promptly such occurrences are published, the greater will be the facilities for making such further inquiries as may be necessary to elucidate the circumstances under which rare stragglers may reach our coasts, and the less risk there will be of the minor collateral incidents (which are always interesting and often important) being omitted or mis-stated. I agree with Mr. Tristram, that such extremely accidental visitors as the bird in question, or as the two others to which he refers, can scarcely be called "British birds," even in the widest sense of the term; but, at the same time, their occurrence at so great a distance from their native countries, is always a very interesting event, as showing the extent to which some species stray beyond the boundary of their natural and normal habitat: and this is especially the case where the species, like the jacamar or the Australian spine-tailed swallow, is either insectivorous, or so nearly so as to be incapable of being kept in confinement, or of being brought over in that state by any vessel. — *J. H. Gurney; Easton, Norfolk, June* 3, 1853.

Occurrence of the Kite at Horndean, Hants.—A pair of these now rare birds were observed, a few Sundays ago, hovering about over the woods near here; they eventually went off in a northerly direction. — *William Henry Hawker; Horndean, Hants, June* 11, 1853.

Capture of the Blue-throated Warbler (Sylvia Suecica) *in Kent.* — A fine old male bird was taken in a nightingale-trap on the 16th of May, 1845, in the county of Kent. I had it alive for several months; and both Mr. Hewitson, and Mr. John Hancock of Newcastle-upon Tyne, saw it while alive. The latter gentleman now has it in his collection.—*James Green, Naturalist;* 1, *East Road, City Road, June*, 1853.

Nest and Eggs of Savi's Warbler. — I have now by me the nest and five eggs of Savi's warbler, which I took at Erith, in Kent, on the 28th of May, 1853.—*Id.*

Occurrence of the Rose-coloured Pastor at the Land's End. — I observed a female specimen of this bird just now in the hands of Mr. Vingoe, who received it from the immediate vicinity of the Land's End, yesterday. I examined the ovary in the body, and found a mass of undeveloped eggs, which, I should think, would not have come to maturity for a month at least. Whether the bird had hatched an early brood I cannot say; but it appears, by the result of the anatomical inspection, that the bird at least continues to breed until the summer is far advanced. I observe that nothing is said by Hewitson, Selby, Montagu, or Jenyns, as to its nidification, eggs, &c. In Mr. Hewitson's work there is no figure of the egg; and so little being known as to this department of the bird's history, I have ventured to state what I have observed, thinking it probable that it might have bred in this country.—*Edward Hearle Rodd; Penzance, June* 11, 1853.

Note on a Partridge's Nest in a Stubble-rick. — I am just returned from witnessing a partridge's nest in a curious place, *viz.*, in a stubble-rick, or, as it is here called, a "stubb-stack." It is about six feet from the ground, and so well concealed in the stubble, that it cannot be seen by any one unless on horseback; and was accidentally discovered by the owner of the farm, Mr. Hillier, of Winterbourne Monckton, as he rode past. On the occasion of my visiting it, the old bird was on her nest, but was off again immediately I went near her. The nest contains fifteen eggs. What renders it the more extraordinary that the bird should have fixed on such an exalted position is, that she is surrounded on all sides by hundreds of acres of corn of every description, of clover and turnips, the rick fixed upon being situated in the middle of the open downs, so that there was no lack of choice of such positions as partridges are wont to select for their nurseries. It is clear that no motives of protection from inclement weather and rude winds (which not unfrequently prevail in these downs) can have actuated the partridge in this strange choice; as the nest is placed on the N.E. side of the stack, and on the shelving side near the top. I believe Col. Hawker gives an instance of a partridge's nest in a pollard tree; and Mr. Yarrell, in his 'British Birds,' quotes another instance from Daniel's 'Rural Sports,' of a partridge's nest on the top of an oak pollard: but with these exceptions I have never heard of the partridge varying so much from the usual habits of its species in its choice of a place for nidification. —*Alfred Charles Smith; Yatesbury Rectory, Calne, June* 11, 1853.

Young Ducks nursed by a Cat. — The following remarkable circumstance has just been detailed to me by an eye-witness. A duck, having hatched out a brood of young ones, was, with all her progeny, placed by her careful owner in a basket lined with flannel, by the kitchen fire. Now it chanced that a cat was in the habit of sleeping away much of her days, as cats are wont to do, by the same fire; the new arrival seemed to interest her mightily, and so great an attachment did she conceive for them, that nothing would suffice but the ejection of their natural parent, and the substitution of herself as their mother. To this end she was seen to go quietly to the basket, and after gently expelling the old duck, a work of little labour, to place herself with great care and gentleness on the young ones, warming them with her body, quietly replacing them with her paw when they attempted to clamber up the sides of the basket, and otherwise playing the part of a kind foster mother. This continued during a period of three weeks at least, during which time my informant occasionally saw them; but I regret that he could not give me the sequel of their history, whether the cat continued faithfully to discharge her self-imposed office, and whether the young ducks throve under her care; or whether, as some malicious persons might suggest, like little Red Riding-hood, and the supernumerary victims of the man-eating ogres in the fairy tales, and the companions of Ulysses in the cave of Polyphemus, they were but nursed for slaughter when they became more worthy of the appetite of their friend.—*Id.*

Note on the occurrence of the Knot Sandpiper (Tringa cinerea) *on the Norfolk Coast, in the Summer Plumage.*—Specimens of the knot, in its nuptial dress, frequently occur on the Norfolk coast in spring, during the northward migration of this species; but during the past month they were, for a few days, unusually numerous, particularly about the 13th of May, on which day a single gunner at Yarmouth procured seventy-three knots, all in full, or nearly full, summer dress, besides several others which were obtained by other individuals.—*J. H. Gurney, Easton, Norfolk, June* 1, 1853.

Occurrence of the Caspian Tern (Sterna Caspia) *in Lincolnshire.*—A very fine specimen of the Caspian tern, in summer plumage, was shot on the 17th of May, at Caythorpe, Lincolnshire, many miles from the sea. It was in good condition, and threw up three or four fish upon being shot. It was brought to Newark to be stuffed, when I had the pleasure of seeing it in the flesh. — *W. F. Foottit; Newark, Notts, June* 4, 1853.

Occurrence of the Sandwich Tern (Sterna Boysii) *&c. near Oxford.* — Three fine adult specimens of the Sandwich tern (*Sterna Boysii*) were shot on the Isis near Oxford, on the 23rd of April last. This is the first occurrence of this bird so far inland with which I am acquainted. About the same time, two specimens of the lesser tern (*S. minuta*) and a razor-bill (*Alca Torda*) were killed near Oxford. — *T. L. Powys; 10, Grosvenor Place, June* 13, 1853.

Occurrence of a Petrel new to Britain on the West Coast of Ireland.

By WILLIAM YARRELL, Esq., F.L.S., &c.

Ryder Street, St. James's,
June 14, 1853.

DEAR SIR,

In answer to your request on the subject of the petrel exhibited at the meeting of the Linnean Society on the 7th of June, I send you the following particulars.

This interesting bird, new, as I believe, to the British Islands, was brought to me by B. Blackburn, Esq., of Valentia Harbour, in the county of Kerry; who afterwards sent me the following note of its occurrence.

"The petrel which I left with you this morning, flew on board a small sloop off the Island of Valentia, on the South-west coast of Ireland, late in the evening of the 11th of May last. Mrs. Blackburn had never observed it before on our coast, and we concluded it to be the Puffinus obscurus of Temminck and Gould."

"It made no attempt either to run or fly away, and suffered itself to be handled without exhibiting alarm; and though apparently strong and vigorous, manifested quite an Oriental resignation to its fate."

The Puffinus obscurus, or dusky petrel, is included by the late William Macgillivray in his 'Manual of British Ornithology,' (part 2, Water Birds, p. 263); with the following remark: — "This species belongs to the Southern and Tropical regions of the globe, although individuals have sometimes been found far North." Reference is also made to his 'History of British Birds,' vol. v., but no page is given. The fifth volume of this latter work was not published until ten years after the publication of the Manual, and does not contain any notice of this bird.

The Dusky Petrel of Latham (Syn.) and Pennant (Arct. Zool.) is not the Puffinus obscurus of more modern authors, since they give it a length of 13 inches; and is probably the Manks Petrel (*Puffinus Anglorum*) of Ray: but Latham, in his Synopsis (vol. vi. p. 417), refers to a petrel without a name, measuring less by 2 inches in length, in the Leverian Museum, said to have come from King George's Sound; and mentions also that it inhabits Christmas Island. The Puffinus obscurus measures 11 inches in its whole length, and 6¾ from the bend of the wing to the end of the longest quill-feather. Six specimens examined gave the same results.

Professor Savi includes this species in his 'Ornitologia Toscana' (vol. iii. p. 40), from an example obtained in Piedmont; and it has a place also in the 'Faune Française' (p. 405), from specimens killed in Brittany and Picardy.

It is therefore included in the 'Birds of Europe' by M. Temminck, Mr. Gould, M. Degland, and Prince Charles Lucien Bonaparte:—the author of the first work observing that "it is rare in the Mediterranean, but common on the coast of Africa to the Cape of Good Hope." And it may be mentioned in proof of the first part of this statement, that the name of this bird does not appear in the catalogues of the birds of Sicily, Malta, Tunis, Algeria or Tangiers.

Messrs. Webb and Berthelot include the Puffinus obscurus in their work on the Natural History of the Canary Islands; and Edward Vernon Harcourt, Esq., to whom I am indebted for a specimen of the bird and its egg, has particularly referred to this species in his published 'Sketch of Madeira,' (pp. 122 and 165). Eight or nine species of the birds of this family breed on, or frequent, the Dezertas, a group of small islands about eighteen miles from Madeira. "The Dusky Petrel is a very tame bird, and will live upon almost anything; it runs along the ground on its belly, and uses its curious-shaped bill in climbing up the rocks. Those I had in my possession alive, were some of them caught with fish-hooks baited with meat, by the Portuguese, and some taken by the hand in the day-time from underneath stones, where they hide from the light." The egg, and they lay but one, measures one inch and seven-eighths in length, by one inch and three-eighths in breadth, rather smaller at one end than at the other, and pure white.

Audubon, in his 'Birds of America' (vol. vii. p. 216), and in his 'Ornithological Biography' (vol. iii. p. 620), gives an interesting account of the habits of this petrel on the water. He found it abundant in the month of June, in the Gulf of Mexico and off the coast eastward to Georgia, some of them wandering from Cape Florida as far North as Sandy Hook and Long Island. Audubon's friend, Thomas Nuttall, in his 'Manual of the Ornithology of the United States and of Canada,' among other localities already quoted, mentions the North-west coast of America.

Captain Cook met with this species at Christmas Island, only 2 degrees North of the Equator, and about 158° W. longitude. This island was so named by Cook, who landed there on Christmas-day, in 1777.

Having carefully examined specimens of this bird from Australia, others from Madeira, and these with the recently acquired example from Valentia Harbour, I am induced to consider them but as one species; and that the Puffinus obscurus of Mr. Gould's 'Birds of Europe,' and the Puffinus assimilis of his 'Birds of Australia,' are, accordingly, identical. Several examples of equally extensive geographical range will hereafter be quoted. Of the Puffinus assimilis Mr. Gould observes: — "All the specimens of this species that I have seen were procured on Norfolk Island, where it is said to breed; consequently the seas washing the eastern shores of Australia may be considered its native habitat: it is evidently the representative of the Puffinus obscurus of Europe, which it so much resembles, and to which it is so nearly allied, that *assimilis* appeared to me to be the most appropriate specific appellation I could apply to it. On my homeward voyage I saw numerous examples flying off the North-eastern end of New Zealand, and this, I regret to say, is all the information I have to communicate respecting it." Two specimens of this bird are in the collection at the British Museum, presented by Sir Thomas Mitchell from Eastern Australia, and the occurrence of this species at King George's Sound, on the South-west coast, has been already noticed.

Birds of great and enduring powers of flight; able, moreover, to take their rest, and obtain their food on the surface of the sea, may reasonably be expected to have a wide geographical range; and of these powers the birds belonging to the families of the petrels and the terns are remarkable examples.

Procellaria mollis of Mr. Gould's 'Birds of Australia.' "Abundant in the Atlantic and Pacific, but more numerous in the former than the latter." A skin of this petrel, obtained at Madeira, was compared with one of Mr. Gould's birds, and found to be exactly similar.

Procellaria Pacifica of Audubon, who received it from the North-west coast of America. This species I have seen from Madeira.

Procellaria hæsitata. This petrel is so rare, that only four or five examples are known. One from the Indian seas; one from the seas of Australia; one from Hayti; and one taken in Norfolk, (Zool. 3691).

Thalassidroma Wilsoni. Taken in four counties of England; seen in the Bay of Biscay, near the Azores and Madeira, Australia and the Southern Atlantic, and northward from thence towards Charlestown.

Sterna stolida. Has been obtained in Dublin Bay, in France, and at St. Helena. Very common over great part of the southern hemisphere.

Sterna fuliginosa. Abundant at Houtman's Abrolhos, on the western coast of Australia; equally so at the Tortugas, South America, and has been killed in England, (Zool. 3755).

These and other instances might be cited of the same species being found many degrees on both sides of the Equator.

I am, Dear Sir,
Yours very truly,
WM. YARRELL.

To Edward Newman, Esq.

Catalogue of the Fishes of Orkney and Zetland.

By WILLIAM BALFOUR BAIKIE, M.D.

(Continued from page 3847).

Order VI.—ACANTHOPTERI.

Lophiidæ.

Fishing Frog, *Lophius piscatorius.* Tolerably frequent.

Blenniidæ.

Yarrell's Blenny, *Blennius Yarrellii.* Frequent at times, especially in Kirkwall Bay, where it was first detected by Dr. Duguid.

Spotted Gunnell, *Gunnellus vulgaris.* Very abundant.

Gobiidæ.

Black Goby, *Gobius niger.* Rare.

Double-spotted Goby, *Gobius Ruthensparri.* Not unfrequent.

Freckled Goby, *Gobius minutus.* Not common.

One-spotted Goby, *Gobius unipunctatus.* Rare.

Callionymidæ.

Gemmeous Dragonet, *Callionymus Lyra.* Rare.

Sordid Dragonet, *Callionymus dracunculus.* Rare.

Cyclopteridæ.

Cornish Sucker, *Lepidogaster Cornubiensis.* A specimen obtained in Scalpa Flow in the winter of 1850, by Mr. J. Syme.

Bimaculated Sucker, *Lepidogaster bimaculatus.* Not rare.

Lump Sucker, *Cyclopterus Lumpus.* Not unfrequent.

Unctuous Sucker, ***Liparis vulgaris.*** Common.

Montagu's Sucker, ***Liparis Montagui.*** A specimen, upwards of 3 inches in length, was obtained by Mr. J. Syme in 1850-51.

Anarrhichadidæ.

Viviparous Blenny, ***Zoarces viviparus.*** Very common.

Wolf Fish, ***Anarrhichas Lupus.*** Not unfrequent.

Gymnetridæ.

Deal Fish, ***Trachypterus Bogmarus.*** First added to the British Fauna by Dr. Duguid, from a mutilated fish cast ashore in Sandey. Upwards of twenty specimens are known to have occurred at different times: one recently caught was lately exhibited at the Zoological Society by Mr. Yarrell.

Zeidæ.

Opah or King Fish, ***Lampris guttatus.*** Upwards of a dozen specimens have been procured at different times. One, nearly 6 feet in length, was captured in Sandey by the late William Strang, Esq.

Centronotidæ.

Horse Mackerel, ***Caranx trachurus.*** Tolerably common.

Scomberidæ.

Mackerel, ***Scomber Scomber.*** Abundant during the herring-season.

Gasterosteidæ.

Rough-tailed Stickleback, ***Gasterosteus trachurus.*** Common.

Smooth-tailed Stickleback, ***Leiurus aculeatus.*** Rare: first detected in a small pool in Orphir by Mr. R. Heddle.

Ten-spined Stickleback, ***Leiurus pungitius.*** Said to have occurred in Zetland.

Fifteen-spined Stickleback, ***Spinachia vulgaris.*** Common.

Mugilidæ.

Thick-lipped Gray Mullet, ***Mugil Chelo.*** Tolerably frequent from June to September.

Sparidæ.

Common Sea Bream, ***Pagellus centronotus.*** One specimen obtained by Dr. Duguid in Scalpa, near Kirkwall.

Sciænidæ.

Maigre, *Sciæna Aquila.* One captured in Zetland in 1819, and another in Orkney by Dr. Duguid, in 1852.

Triglidæ.

Gray Gurnard, *Trigla Gurnardus.* Not unfrequent.

Red Gurnard, *Trigla Cuculus.* Two caught in Orkney in the winter of 1850-51.

Scorpænidæ.

Norway Haddock, *Sebastes Norvegicus.* Occurs in Zetland.

Trachinidæ.

Lesser Weever, *Trachinus Vipera.* Two specimens have lately been obtained in Orkney, one in Kirkwall Bay.

Cottidæ.

Short-spined Cottus, *Cottus Scorpius.* Very common.

Long-spined Cottus, *Cottus bubalis.* Common, but not so much so as the last species.

Pogge, *Aspidophorus Europæus.* Not common.

Wm. Balfour Baikie.

Haslar Hospital, May 18, 1853.

(To be continued).

An Introduction to the Study of the Nepticulæ.

By H. T. Stainton, Esq.

1. *What is a Nepticula?* In the good old times when Nepticulæ were Microsetiæ, and Lithocolletides were Argyromiges, a very similar question was put by an incipient entomologist to the most indefatigable collector (in those days) of these pygmy tribes. "But, my dear Sir, how am I to know a Microsetia? What is it like?" "It is something like an Argyromiges, but *more robust.*" And however much one may be inclined to smile at the idea of a Nepticula being a *robust* insect, this description does at once convey an idea of the short thick-set figure of these insects. They do not approximate closely to any of the other genera of Micro-Lepidoptera.

In repose, the wings are nearly flat, being but slightly elevated where they meet over the back. The anterior wings are short in comparison with their breadth. The antennæ are not nearly half so long as the anterior wings. The more delicate characters not easily visible to the naked eye, are the rough head and *face*, and the enlarged basal joint (eye-cap) of the antennæ. To conclude, the answer to the question, "What is a Nepticula?" would be as follows:—*A Nepticula is a very small moth, which in repose keeps its wings flat (its anterior wings being short in proportion to their breadth), which has remarkably short antennæ, and runs with extraordinary agility.*

2. *What are the habitats of Nepticulæ?* These small insects have attacked a great variety of plants, and from the lordly oak of the forest to the lowly Hypericum on some sandy bank, there are probably few plants of which they are not consumers. But at present, in speaking of their habitats, I wish to confine myself to the localities frequented by them as perfect insects. In the first place, they frequently swarm on palings, and here they are caught with comparative ease. In the second place, they are at times numerous on the trunks of trees; but here, to see is not to catch. You examine the rugged trunk of an oak, and see none: look again,—look in that crevice,—do you not see a black speck between two white ones?—that black speck is the head of N. atricapitella, the two white specks are the eye-caps at the base of his antennæ. Now, to catch him, you must dislodge him from that convenient nook; poke him gently with a blade of grass. Ah! he has jumped away. This is often the case in attempting to catch Nepticulæ on the trunks of trees. In the third place, many species may often be beaten out of the plants on which they feed. Thus, N. subbimaculella from the oak, and Mr. Sircom used to obtain N. intimella from the sallows by sweeping the ends of the branches. In the fourth place, they may sometimes be found flying freely, of their own accord: it was thus that I found N. pygmæella had a penchant for early rising, and was generally on the wing from 5 to 6 A.M. N. gratiosella sometimes flies freely on a sunny afternoon.

3. *Where do the Larvæ of the Nepticulæ feed?* They feed on the parenchyma of leaves, not, however, distorting the shape of the leaf, as the Lithocolletides do,—the leaf remains flat, only the mined place becomes discoloured. The discoloration is, at first, hardly perceptible, but becomes more evident in the process of time, until, at the expiration of several months, it is sufficiently conspicuous to strike the

most superficial observer. A young collector is often annoyed by the circumstance of the uninhabited leaves being more conspicuous than those in which the larvæ are feeding. He looks around him, and observes leaf after leaf in which the larvæ *have been;* but though there are many leaves before him in which the larvæ *are feeding*, he passes them over, the discoloration being so slight.

The generality of the species mine the leaves in circuitous wavy paths, of which examples may easily be seen on the leaves of the bramble. Yet some mine in large blotches, as the species on the sloe, and some in wavy tracks, so closely applied as to form a blotch, — no unmined portion of the leaf lying between the folds of the serpentine path: an example of this kind may be met with on the elm. Others mine in numerous concentric circles, as the species on the Hypericum, and that which Mr. Shield discovered last autumn, on the sorrel.

In searching for the larvæ of Nepticulæ, the young collector must not be misled by the numerous mining larvæ of Dipterous insects, of which an example may easily be found in the leaves of the buttercup, sow-thistle, primrose, &c. The larvæ of Nepticulæ leave behind them in their narrow mines, a continuous track of excrement; whereas, in the Dipterous mines, the excrement is scattered here and there. In the case of the blotch-miner of the sloe, the excrement is usually in a heap at the lower end of the blotch; and in the leaves of the Rhamnus catharticus and Clematis Vitalba, which have been mined by the larvæ of Nepticulæ, the excrement appears to have been nearly of a fluid nature, and does not form the ordinary series of little black grains.

4. *Where do the Larvæ of the Nepticulæ assume the Pupa state?* In one solitary instance the larva does not quit the mined leaf, but spins its cocoon therein, and changes to the pupa; this is the species that mines the Hypericum. All the other species yet observed, when full fed, emerge from the leaf, and, I believe, usually descend to the ground, where in all probability they spin their cocoons among the withered leaves. The gallery-miner of the rose is the only species of which we have yet learned to collect the pupæ; these may frequently be found in the hollow of the footstalk of the leaf, or upon the stem, sheltered by some projecting thorn or branch. Instances do occur, though very rarely, of gallery-miners of the rose changing to the pupa inside the leaf; the cause of this departure from the usual habit of the species is yet unexplained.

5. *To obtain Specimens of Nepticulæ, should we collect them in*

the Larva, Pupa, or Imago state? Certainly in the larva state. However simple and easy it may appear to a beginner to collect the perfect insects by scores off some favourite paling, yet, when he has collected them, pinned them, and set them, what is he to do with them? Put them in his collection. Very well; but as what? As specimens of the *genus Nepticula;* for he must be a bold man who would offer to assist him to the names of the *species*, thus taken at large. Some few conspicuous species may indeed be identified with tolerable ease; but there will probably always be a sufficient quantity of nebulous matter to render the identification of all the specimens caught in the perfect state almost an impossibility. Yet I do not deny that some conspicuous new species may occasionally be found in the perfect state, so that looking on palings may still be of *some* use; though to collect from them ordinary-looking species, might be of *no* use.

As, except in two instances, we do not know where to find the pupæ of Nepticulæ, it is manifestly of no use attempting to collect them in the pupa state; but even if we could find the pupæ, and could ascertain from what tree or plant they had come, unless that tree or plant produced only one species, we should still be deficient of our chief means of identifying the species. By collecting the Nepticulæ in the larva state we can distinguish the species; and frequently we can collect them in a wholesale manner, of which we could have no chance if collected in any other state. Thus, in less than a quarter of an hour, one morning last October, I collected about 500 of the larvæ of the small miner of the nut.

6. *How are we to proceed to collect the Larvæ of Nepticulæ?* These larvæ are so plentiful that, when once observed, the wonder is that they should not sooner have attracted our attention; only the matter is, they require to be looked for: you must not expect to find them unless you stop, stand still, and examine attentively the plant or bush that is before you. I will mention a striking instance that happened to myself, which may be of use as illustrative of the necessity of continuing to look, and not despairing because a first glance is not productive of any results. About the middle of last October I paid a visit one morning to a bush of Rhamnus catharticus, on which I expected to find the autumnal brood of the larvæ of N. Catharticella. To my surprise, on carefully examining the bush I could not find a single larva: however, I was so satisfied that they must be there, that I continued to look, and as my eyes gradually became more accus-

tomed to the indications of those objects for which I was searching, I found that, so far from there being no larvæ before me, they were really there in hundreds. This was a lesson which I resolved should not be lost upon me, and I hope it will also be useful to others.

Having thus urged the necessity of continued search, I will take it for granted that the collector has succeeded in finding the objects of his pursuit, but he sees before him some full-grown, and some very small, and probably wishes to know whether he should collect all. Unless the small ones be indeed very small, he may safely collect them, as these larvæ feed up in a very few days, and if he keeps his leaves from drying, they will be able to feed up after he has collected them. It is not necessary to gather the branches, to pick the leaves is quite sufficient; only bearing in mind to put them at once into the collecting-tins, and to keep them where they will be rather moist afterwards. We will imagine the collector to have proceeded from bush to bush, till he has collected a tin-full of leaves of various sorts, inhabited by a variety of larvæ of Nepticulæ. He then returns home, and the question might be asked, "Are the larvæ to be left in the tin, as collected?" By no means; for if so, will not all the species become mixed? The most pressing thing to be done directly the collector returns home, is to turn over the leaves he has collected, and to sort them very carefully, putting each kind of leaf by itself; and where two or more species of larvæ occur in the same sort of leaf, to subdivide those leaves according to the different species of larvæ, and then each separate batch should be carefully rolled up in some soft paper, and put into a tin or glass jar.

It is not advisable to leave the larvæ unsorted in the collecting-tins a moment longer than can be avoided; otherwise some of the larvæ will have become full-fed, and have crept out of some of the leaves, and then how is the collector to know to which sort they belong?

At the expiration of a week after the larvæ have been collected, it may be taken for granted that they will all have assumed the pupa state, and the rolls of soft paper should be carefully opened, and the cocoons of each roll, which will be found either attached to the paper, or to the leaves, and generally in little clusters, should be then put into little glass tubes, and labelled according to the plant from which they came, and the mode in which they mined that plant.

7. *At what time of the year should we look for the Larvæ of Nepticulæ?* Probably all the species are double-brooded, (N. aurella has indeed many broods in the year, there being few months in which its

larvæ may not be met with); and the summer brood may be looked for from the middle of June to the middle of July: but the great harvest is from the middle of September, until the trees and hedges are bare. The collector has then comparatively no other game in view, and the larvæ are in far greater abundance than in the summer; besides, by keeping the pupæ in a warm room, he breeds a considerable number during the winter months, when he would otherwise have no insects to set: and this very circumstance of his continuing to set these little moths uninterruptedly throughout the winter, will give him that knack and dexterity in handling them, of which we are all so much in need.

8. *On what Plants is the Collector to look for the Larvæ of Nepticulæ?* On all. Probably there are few trees or bushes on which some species does not feed; and though we can hardly expect all the low-growing plants to be fed upon by species of this genus, it is only by continually looking on these plants that we can hope now and then to detect a new species of larva.

9. *On what Plants have the Larvæ of Nepticulæ been found?* The following is a list of those plants at present known to serve as food to the larvæ of Nepticulæ: —

* Apple.
Beech.
Birch.
* Bramble.
* Buckthorn, (*Rhamnus catharticus*).
† Cherry.
† Clematis.
* Elm, (2 species).
* Geum urbanum.
* Hawthorn, (3 species).
* Hornbeam, (2 species).
* Hypericum perforatum.
† Mountain ash.
* Nut, (2 species).
* Oak, (3 species).
* Rose, (2 species).
* Sallow.
* Sloe.
Sorrel.
† Strawberry.
† Teucrium Scorodonia.

The perfect insects have been bred from the plants marked thus, *. On those plants marked † no larvæ of Nepticulæ have yet been found, but the leaves that had been mined by them have been observed, and I have specimens of the mined leaves, which I can show to those curious in such matters.

Should any collector fall in with any larvæ of Nepticulæ upon any plant not mentioned in the above list, I should be most thankful for the information. The number of species is in all probability far from exhausted; and there are several conspicuous species which we have not yet succeeded in breeding. For instance; N. argentipedella (if a birch-feeder, must make a larger mine than those I have yet found), angulifasciella, argyropeza (in all probability on some species of poplar), intimella (from Mr. Sircom's observations should be expected on sallow), Louisella, quinquella (most probably an oak feeder), and trimaculella (which should occur on the Lombardy poplar).

Of those species that have been already bred, some may be at once named specifically; others appear to form parts in groups of closely allied species, which, to discriminate accurately, require the careful examination of a series of each individual composing the group: and it is therefore hardly advisable rashly to give a name, while we are uncertain what the distinguishing characters are.

Apple. The species bred from the apple forms one of the Ignobilella group.

Bramble. This is the well-known large species, N. aurella.

Buckthorn. To this species, closely allied to N. Septembrella, and not hitherto described, I have given the name of Catharticella.

Elm. Two larvæ were distinguished, one yellow and the other green. The imago of the green one is not closely allied to any previously known species; from the gut-like appearance of its mine, Mr. Douglas has proposed for it the name of N. viscerella. The imago produced from the yellow larva is the N. centifoliella of my Catalogue, but clearly not the continental centifoliella, which is a rose feeder. From the tendency of the larva to mine at the edge of the leaf, going even in and out all the serratures of the leaf, I propose to call it marginicolella.

Geum urbanum. Closely allied to N. aurella, if, indeed, it be truly distinct.

Hawthorn. Two larvæ only were distinguished, one green, the other yellow; it would however appear that there are two kinds of the latter, as, from yellow larvæ I obtained N. pygmæella and gratiosella. The green larvæ produced a species allied to N. ruficapitella.

Hornbeam. Two species of larvæ mine in the leaves of this tree, but they are not distinguishable by colour, only one is considerably larger than the other. The imago of the large larva is one of the Floslactella group; that of the small larva belongs to the Ignobilella group.

Hypericum perforatum. This is the no longer unique, but still scarce, N. Septembrella.

Nut. Two species, a large and a small larva; the perfect insects are parallel to, if not identical with, the two species from the hornbeam.

Oak. Two species of larvæ were distinguished, a pale-coloured and a dark-coloured one. It would, however, appear that there are two species of the latter, as from them have been bred both N. ruficapitella and atricapitella, which can no longer be considered as sexes, since several pairs of the latter were taken *in copulâ* last summer. The pale larva produced N. subbimaculella.

Rose. From the mode of mining, and the colour of the cocoons, there is little doubt that two species feed on the rose: — one, which had always been confounded with ruficapitella (see Lewis, in Ent. Mag. i. 422), but of which one sex has the tuft of the head black, was observed by De Geer, and Goeze has given to his insect the name of anomalella; the other species, which I have not yet bred, may probably be the continental centifoliella.

Sallow. Only one species of larva has been observed, the perfect insect from which belongs to the Floslactella group.

Sloe. From the rather common blotch-miner of the sloe, I have bred a species of the Ignobilella group. I have a single leaf mined in a different way, but have not yet bred the moth from it.

10. *If the Species are so numerous, and so very closely allied, how are they to be distinguished?* This, no doubt, is a difficulty, and if we collected only the perfect insects, it would be one not easily answered; but by collecting and observing the larvæ, we ascertain beforehand the distinctness of a species, even if the imago should afford us no character.

If you wish to separate Acronycta Psi from tridens, you must breed them both; so it is with the Nepticulæ.

The points to be borne in mind with a view of distinguishing the species, are: — 1. The food-plant. 2. The mine. 3. The larva. 4. The cocoon. 5. The perfect insect.

1. *The Food-plant.* However much we may ultimately find it necessary to qualify the assertion, it is no doubt advisable to assume that no species feeds on two different kinds of plants. The bramble, strawberry, and Geum are allied plants, and *may* all be fed upon by N. aurella; but to assume that because they are allied plants, the miners in them are without doubt aurella, would be jumping to a conclusion, and probably retard the discovery of species. The apparent identity of the two species

mining the nut, with those mining the hornbeam, is a matter of considerable interest, as the plants are not so closely allied as others in which we find no apparent identity of the miners.

2. *The Mine.* The variety in the modes of mining is very considerable: there is the long wavy gallery, as in N. anomalella; there is the long gallery so closely twisted as to form a blotch, as in N. viscerella; there is the short gallery returning into itself and forming a blotch, as in N. subbimaculella; there is the short rather broad gallery, as on the Teucrium; and there is the complete blotch, as that on the sloe. Besides the still more distinct mines of concentric circles on the sorrel, and of numerous extremely fine mines round and round the same small space, as done by N. Septembrella on the Hypericum.
3. *The Larva.* This may differ in colour, size, or marking; frequently when two species feed on the same plant, one is yellow and the other green; and this difference of colour is sufficiently apparent through the cuticle of the leaf.
4. *The Cocoon.* This may differ in size, shape, substance, and colour. The difference of size will generally be proportionate to the difference of size of the larvæ, and in the case of the species of the nut and hornbeam is considerable, one being about twice the size of the other. The difference of shape will frequently help to point out different species; some are oval, others shaped like mussel-shells; the cocoon of N. aurella has the edge rather flat and scalloped. In substance, cocoons differ in being more or less tightly woven, some having a flossy texture. In colour, the differences are very considerable; the species from the apple-leaves makes a bright yellow cocoon; one of the hawthorn-miners makes a beautiful pink cocoon. Continued observation might thus enable a collector to distinguish many species by the cocoon alone.
5. *The perfect Insect.* It is not necessary here to enter into the different characters by which these may be distinguished; and really, the quantity of paper I have filled reminds me, that unless I wish to be considered a bore by your readers, I must conclude this somewhat lengthy, but, I hope, not tedious "Introduction to the Study of the Nepticulæ."

H. T. Stainton.

Mountsfield, Lewisham, April 30, 1853.

Proceedings of the Entomological Society.

June 6, 1853.—Edward Newman, Esq., President, in the chair.

The following donations were announced, and thanks ordered to be given to the donors: — The 'Zoologist' for June; by the Editor. The 'Athenæum' for May; by the Editor. The 'Literary Gazette' for May; by the Editor. The 'Proceedings of the Zoological Society,' No. 201—226, and the 'Transactions of the Zoological Society,' Vol. vi. part 3; by the Society. The 'Proceedings of the Royal Society,' Vol. vi. No. 95; by the Society. 'Revue et Magasin de Zoologie,' 1853, No. 3; by M. Guérin Méneville. 'Entomologische Zeitung' for February and March; by the Entomological Society of Stettin.

Mr. Waring exhibited a fine pair of Notodonta trepida, bred by Mr. B. Standish from larvæ found on oaks.

Mr. Bond exhibited some beautiful specimens of Anticlea Berberata, bred from larvæ found on the berberry, in Cambridgeshire, last year.

Mr. Wilkinson exhibited Lithocolletis Stettinensis, *Nicelli*, a new species bred from caterpillars found in the leaves of alders last year.

Mr. Stevens exhibited a fine pair of Notodonta Carmelita, and part of another specimen found in a mutilated condition, all taken at Black Park, Bucks, on May 8th.

Mr. Douglas exhibited Catoptria Albersana, and a drawing of the larva from which it was bred. The latter he found at Wickham, in September last, in a leaf of honeysuckle, which it had converted into a dwelling by making a fold along its entire length.

Mr. Boyd brought for distribution specimens of Tephrosia consonaria, recently captured in Buckinghamshire.

Mr. Westwood mentioned some curious circumstances that had lately occurred amongst his bees. About ten days since a hive threw off a swarm, which settled at the entrance of the next hive, the inhabitants of which resisted the intruders, and much fighting occurred. Mr. Westwood interfered, and removed the queen; having released her, she immediately led the swarm to the entrance of another hive, where the same scene of confusion again occurred: a second time he took her away, and placed her upon a rose-bush, whence she took flight, and, he supposed, returned to the hive from which she originally came, for the swarm soon returned to its parent abode, and from this hive today a fine swarm came forth.

Yesterday another hive sent out a swarm, which joined a swarm from a neighbouring hive settled about forty yards distant, and both of them remained in one hive. There was much fighting, and as many bees were killed as would fill a pint measure; but today they seemed to be amicably settled, whence he presumed that one of the queens had been put to death. The junction of these swarms seemed to imply the influence of some attraction upon one of them by the other, or a communication between them.

Mr. Waring knew an instance in which four swarms joined and remained together, the hive having to be greatly enlarged to hold them. In the Exhibition of 1851, was a case containing six swarms, but these had been artificially brought together.

Mr. Wallace read a paper "On the Insects used as Food by the Indians of the Amazon," enumerating species of five Orders which are sought for and eaten with avidity.

Mr. Douglas read a continuation of his "Contributions to the Natural History of British Micro-Lepidoptera," consisting of illustrations of the transformations of the genera Bedellia and Elachista.

The President announced the publication of Part 5 of the current volume of the Society's 'Transactions,' and that the Prize Essay on the duration of life in the Honey Bee was reprinted for separate sale.—*J. W. D.*

Proceedings of the Dublin Natural History Society.

Friday, May 13, 1853.—ROBERT CALLWELL, Esq., M.R.I.A., in the chair.

The following donations were announced, and thanks ordered to be given to the donors: — Two specimens of the rock pipit (*Anthus petrosus*), a bird which breeds in great numbers in Rockabill, off the Skerries, in the month of June: also, a specimen of the snow-bunting (*Plectrophanes nivalis*), shot in the county of Kerry: presented by Mr. Andrews. A 'Treatise on the Climate of Nottingham,' by Edward Joseph Lowe, Esq.; presented by the Author.

Mr. J. R. Kinahan read the continuation of his paper "On the Autumnal Songs of Birds," cemmenced at the April meeting. We here give the first part in full.

"When I commenced this paper, it was my intention to have confined myself to a record of those birds which sing during the latter months of the year about Donnybrook, but on reviewing my notes on this subject, I find it impossible to separate them from their congeners, for, in fact, most of our songsters sing nearly the whole year round. The remarks I am about to submit to the meeting, are an abstract of nearly daily records, extending over a period of at least five, and, in some instances, seven years, and in every case were made by myself, and their value, if they have any, depends solely on this. With but few exceptions, which I have noted, they relate entirely to the birds of Donnybrook, and therefore, to a general naturalist, are only useful as compared with similar records made in other quarters, as, during the time I was making them, I have found a few miles sufficient entirely to alter my list.

"Our earliest songsters are the robin, the wren, pied wagtail (*Motacilla Yarrellii*), gray wagtail (*M. Boarula*), and hedge-fauvette (*Accentor modularis*). These commence their autumn song pretty much in the order here set down. The robin begins in the second week in August or the first week in September. Twice during the last five years do I find him noted before the former date, *viz*., on the 1st of August, 1851, and, in 1852, when he commenced on the 7th of August. He is, without exception, our most indefatigable songster. Every weather is alike to him,—sun, fog, frost, snow, wind, or rain. He sings all the year round, except for about six weeks in summer, *i. e.*, from about the last week in June till the second week in August. He generally sings every day, morning and evening, till about the middle of December, after which time he does not sing, except in the morning, until about the middle of January, when he recommences singing in the evening, and also changes his autumnal song for that of the breeding-season. Sometimes the song is not so regular as is here stated. In 1849 he commenced in September, and sang regularly till the middle of November: last autumn he recommenced on the 7th of August, and continued in song almost daily up to the present date: in 1851 he commenced on the 29th of August, but sang most irregularly, as I find him noted only four times between that date and the 1st of January,

1822. This did not arise from the harshness of the season, for the winter of 1850 was a great deal more severe than either of the other two, and yet we find him singing more regularly than in the comparatively milder winter of 1851. White, in his comparative list of the song-birds of Selborne, states that he 'sings all the year round, except during frost.' Frosty weather does not affect his song in this country, as I have heard him singing even during snow. The song is delivered from an elevation, and also when flying. This bird possesses also a singular faculty of singing with the bill closed, even with a worm between his mandibles—a faculty I have observed only in one other native bird, *viz.*, the lesser willow-wren. He is also one of our nocturnal warblers, generally preferring a frosty moonlight night for this purpose. In the winter of 1847 we had several such nights in close succession; and a robin used to sing under my window every night, beginning generally about twelve and ceasing at two. I have heard him once or twice in the beginning of July.

"The wren, though commencing later than the robin, is more regular as regards the period of commencement of his song; once only, during the last five years, did he commence earlier than the beginning of November. He sings most vigorously during frosty weather, but is not at all so regular a daily singer as the robin, as he seldom sings in open weather. In Scotland, Mr. Hepburn records that he does not sing in winter; and White says 'all through the winter, except in frost:'—singularly enough, the very time I have oftenest heard his song about Donnybrook. He sings generally, if not always, from an elevation, using a great deal of action and with quivering wings. His song ceases about the middle of June, but is sometimes continued into July; the earliest date I ever heard him was August 18, 1851.

"The wagtails occasionally sing all through the winter, on fine days, but are not such regular songsters as any of the others. For the most part they sing on the wing, rising for a short distance into the air, and in summer and spring, even on a bush or wall. Early in the season, they sing oftener on the ground than anywhere else. Their song is continued late into summer, as they may be heard occasionally even as late as the 20th of August. The earliest date I have heard them singing was the second week in November.

"The winter fauvette, or dunnock, is a more delicate bird than any of those yet mentioned, and therefore not so regular in his song till spring. He delights in a soft, drizzling morning, but may be heard also during frost; I only once heard him singing during high wind. He generally commences about the third or fourth week in November, and sings till about the second week in July; in some seasons he does not commence till the middle of January, this was the case in 1851. Early in the season he chooses a low bush for his station while singing; but as the season advances, he mounts higher and higher, even to the tops of high trees; in the height of the breeding season he even sings on the wing. He is recorded as one of our night-singers, but I have never heard him myself at that period. Mr. Hepburn states that in Scotland he sings 'from the second week in February till the first in August, and occasionally in winter and autumn.' White's record is, 'early in February till July 10.'

"The next in order, if we look to regularity of period in commencing their song, are the thrushes; but it will be more convenient to consider first some of the other songsters which, though more irregular, generally begin earlier. These are, the chaffinch, the tits, skylark and gold-crest. The first (*Fringilla cœlebs*), sings occasionally on soft mornings, as, during the seven years over which these notes extend, I find him recorded in every winter month except November, though the regular time for his song is about the 14th of February. Singularly enough, in three several years, although previously to this day he had only sung occasionally, and a single bird here and there, on the 14th of February the groves, as though by common consent, were filled with his sprightly song. He often sings till late into July, though, generally speaking, the third week in June ends his season. The earliest date I ever heard him was on the 20th of October. He sings from a bough, generally at middle height from the ground. In Scotland, he is recorded as beginning the fourth week in January and ceasing on the 2nd of July, and as singing occasionally through the autumn and winter. White records him as 'beginning in February and ceasing in June.'

"The tits found about Donnybrook are Parus major, P. cæruleus, P. ater, P. longicaudatus, and P. palustris. Of these, the two last may be excluded from my list of singing birds of that locality, as the first of them is merely an occasional winter visitant, and the second a very rare one, having occurred there only twice to my knowledge, once in the latter end of autumn, and once in the summer. Of the other three, the great tit (*Parus major*) begins earliest; once I find him recorded in August and twice in September; he does not generally begin till the middle of January. He is the most indefatigable songster of his race; in the beginning of February and through the month of March, generally commencing his harsh song some hours before daybreak, and then keeping it up for three or four hours. He ceases in the middle of June, sings at an elevation, and while in pursuit of food. The nun (*P. cæruleus*) generally commences towards the latter end of January, and continues in song until towards the end of July. The cole tit (*P. ater*) commences about the same time, but ceases a little earlier. The songs of all the tits are much alike, both in note, and in delivery, duration, &c. They all sing at an elevation, and, if the season be open, do not mind a little frost. The long-tailed tit (*P. longicaudatus*), though not a resident in Donnybrook, is plentiful enough about Miltown and Rathfarnham. It has more pretensions to song than any of its congeners. It commences singing about the beginning of February, and ceases in June. The song is delivered on a bush, and may be heard even in frost.

"The lark, as a winter songster, is very irregular, and generally harsh and unmusical until the spring suns have warmed it; some years, however, it sings in autumn as merrily as in summer or spring. Last autumn it was singing as sweetly as ever, even as late as October and November. It seldom, however, commences its song till about the beginning or middle of February; and generally sings earlier in the morning than any other bird, and later in the evening. Weather exercises little influence on its song when once it has commenced, singing as merrily in the midst of the pelting shower or driving sleet as in the bright sunshine; snow or high winds alone affect it. It sings late into July, but remains silent during August. Its method of singing I need not describe, as it must be familiar to all; sometimes, especially in the breeding-season, it sings on the ground. I have shot the females in the act of singing.

"That little fairy-like bird, the gold-crest (*Regulus cristatus*), comes next in order, but is only an occasional winter songster. His legitimate time for song is early spring, commencing in January and ending in the beginning of June: on frosty days, however, he may be heard singing even as early as the 18th of November. The song is always delivered from an elevation, is short, and to some might even appear harsh, much resembling that of the tit-mouse.

"The most regular autumn songsters we have, excepting the robin and the wren, are those of which we now come to speak,— those peerless songsters, the thrushes, or at least the two great types of the genus here, the common thrush and the blackbird.

The former of these I find commences either early in November or December; the earliest note I find is the 12th of November, 1830. Its song is of course familiar to all; early in the season it sings either in a low bush, or else on the ground, and only in the morning; as the season advances, it sings in the evening and chooses a higher station, till, in the height of the season, it sings from the highest trees: earlier, however, it prefers close brush-wood, and hence may be heard singing most regularly in such places as abound in thickets. The low bushes on the Donnybrook road, near Wellington road, are a favourite station for them, as are also the lowlands about Tallaght and Crumlin. Later in the season their song may be heard in great perfection at Lough Bray, and in the valley of the Dodder, part of which, Glen-as-Moil, gets its name from the numbers of these birds found in it. They cease singing about the third week in June. The weather that seems most congenial to them is soft, open mornings, although they may be heard singing sweetly during frost. They are our most beautiful night-singers, and I have often heard them. One instance I will transfer from my note-book: —'March 5, 1852, moon very bright, though the night was misty and soft, the thrushes (*Turdus musicus*) were singing as sweetly as though it were morning.'

"The next member of the group, the blackbird, generally begins his song in November, though sometimes he may be heard even as early as September; he is never so regular a songster as the thrush, but ceases about the same time. Though a very common bird, the peculiar charms of his song are known but to few, for though of far less compass and fewer notes than that of the thrush, it far surpasses it in plaintive mellowness. Indeed, we have no word in the English language which can convey a notion of it; that usually adopted, namely, 'whistling,' giving about as much idea of it as it does of the sound of the trumpet. The thrush's note may surpass it in power, but there is a melody in the blackbird's song much more pleasing than all the polished execution of its rival's elaborate strain. To hear it in perfection, you should hear it in early spring, on a calm, misty, soft morning; or, better still, in early summer, in that stillness which precedes or follows a summer thunder-storm, when the skies are black with lowering clouds, all things else silent, save, perchance, the chirping of frightened sparrows in a neighbouring hedge; then may the blackbird's song be heard, like some good spirit's voice, breaking through the solemn silence, and bidding us not despair, for that though the storm may rage, it cannot utterly destroy. As far as my observations go, it invariably sings from an elevation, and in spring its song is generally the precursor of wet. It sings at first only in the morning or at mid-day; but about February or the beginning of March, may be heard singing in the evening.

"Our other native thrush, the missel-thrush, is not a regular resident in Donnybrook, I can therefore only state that I have heard him in January, February, and March, uttering his unmusical song in the tops of the tallest poplars.

"The water-ouzel is not found about Donnybrook; I have heard him, however, singing in the valley of the Dodder, about Bohernabreena, during every month but July. They always, I believe, sing perched on a stone with quivering wings: it is a night-warbler; the song is soft, low, and pleasing.

"The titlark is the next bird which comes before us, and is truly a summer songster. Its song is hardly ever commenced earlier than the second week in February, and ends before the end of July. The song, which is short, is uttered on the wing; the bird, rising from the ground after the manner of the common lark, takes a short circular flight, and concludes its song on some tree or other elevated position: it occasionally sings on the top of some high tree. You seldom hear this bird in early spring, unless the day be soft and open, though he may sometimes be heard singing even in raw frosty mornings. This season (1853) was a most unpropitious one at the period when the bird generally commences, and I do not find him in my notes until March. As the season advances, frost does not exercise much influence on his song, a remark which applies to songsters in general. The females of this bird sing, as I have proved by actual dissection. It rarely sings on the ground.

"The next group we shall consider — the buntings — contains three species, *viz.*, Emberiza Miliaria, E. citrinella, and E. Schœniclus. Their songs very much resemble each other in character. That of the common bunting (*E. Miliaria*) is the most varied and powerful; it has been not unaptly compared to a bunch of keys drawn rapidly round a notched ring. It may be heard, with very little intermission, from the beginning of February till the end of August. This bird sings at all times of the day, but particularly during the bright hours of noon. The song is always delivered from a slightly elevated position, such as the tall stems of the cow-parsnip, or on some bush slightly higher than the rest of the hedge. He is not a very common bird about Donnybrook.

"The black-headed bunting (*E. Schœniclus*) has a very feeble harsh song. He commences about a fortnight or three weeks later than the last, and ceases as soon as the breeding-season is over. He sings either on the top of a high tree, or in a bunch of rushes: he also sings at night.

"The yellow-hammer (*E. citrinella*) has the same range of season as the common bunting, and sings either from a bush or a wall, or from a high bank; he, too, sings at noon; the song is shorter, but not so harsh: it was in song on the 25th of January, 1852.

"The linnets found about Donnybrook are three—Linota minor, L. montium, and L. cannabina: but owing to their not being regular permanent residents there, I cannot speak fully about them. They are all generally in song about the second week in February, and cease to sing in June or July; they all sing from an elevation.

"The greenfinch (*Fringilla Chloris*) generally begins his discordant song in the latter end of February, and ends it in June, but may occasionally be heard in August and September. They usually, at least in the commencement of the year, sing in concert; they always sing from a height, and, as well as the true linnet, may be heard in autumn recording for hours.

"The only other native songsters heard about Donnybrook are three — the common starling, the woodlark and the stonechat. The starling (*Sturnus vulgaris*) sings from the beginning of January to the end of May, and chooses some elevated spot for his orchestra. The woodlark (*Alauda arborea*) I had the good fortune to come across only during one season, that of 1851, and he commenced his song in the middle of February, and ceased in the beginning of June. I remarked that he sung on wing, not rising up into the sky in rapid spires like the skylark, but sweeping round in wide circles, and ended his song on the ground. Whether this is its common method of singing or not I do not know, as it never, to my knowledge, bred in Donnybrook since. The stonechat (*Saxicola rubicola*) conducts us to the migratory birds; as the same remarks apply to it and to its allies, the whinchat and wheatear. The latter bird (*Saxicola Œnanthe*) is not a resident in Donnybrook, only visiting us at its entrance into and departure from this country. It is, however, very common about Bohernabreena; so that I have had copious opportunities of watching its habits. They all generally begin their song on Patrick's day; and cease to sing before the end of June. They sing either on a bush or on wing, rising for a short distance into the air. As the whinchat (*Saxicola rubetra*) is supposed to be only a summer visitant, I might as well mention that I have killed or observed this bird in the months of October, September and February.

"The chiff-chaff (*Sylvia rufa*) generally arrives here the latter end of March, and sings as soon as he comes. The earliest date I ever observed him on was the 10th of March, 1849, near Templeogue, and I find him noted in every month until the 15th of September. The song is delivered from some bush or tree, but generally among the branches, at about middle height from the ground. It has two songs, one of which is peculiar to the breeding-season, the other to the remainder of his sojourn here.

"The lesser willow-wren (*Sylvia Trochilus*) arrives here a fortnight or three weeks later than the last, and ceases to sing at about the end of July. He sings either on the topmost boughs or on the wing; his song is much more prolonged than that of S. rufa. This bird sings with its bill closed, similarly to the robin; I have remarked this trait only while he was feeding.

"The whitethroat (*Curruca cinerea*) arrives here in the beginning of May and sings till August, with an interval of three weeks in July. Its song is a melancholy wail, intermixed with a queer scolding note. It sings thus: — rising from the top of some bush with a great deal of action, fluttering wings, &c., it takes a short flight upwards, and then, wheeling back to the point it started from, it ends its song perched. The earliest record I have of it is the 2nd of May, and the latest the 29th of August, 1850.

"The three swallows (*Hirundo urbica*, *H. rustica* and *H. riparia*) all make an attempt at song. They generally do not commence singing until three weeks after their arrival in this country, which usually takes place at this side of the bay in the following order: — The sand-martin the last week in March or the first in April; the earliest record I can find is the 20th of March, 1849: they are generally all gone by the first week in October. This bird has very little pretensions to song; it sings on the wing, or on a bank. The chimney-swallow comes on the first or second week in April; the earliest I have noted occurred on the 4th of April, the latest date I find recorded in Donnybrook is the 20th of October, 1849. It has more pretension to song than the rest of the genus, and sings more sweetly in autumn, even as late as the month of September: it does not sing during the latter weeks of July. The window-swallow scarcely sings at all: it arrives here generally later than the other two; the earliest date I find recorded is the 13th of April, 1852. It leaves us about the middle of September, although last year a pair of them were feeding their young, which were in the nest, as late as the 3rd of October.

"That polyglot, the sedge-warbler (*Sylvia Phragmitis*), concludes the list of summer songsters. He arrives here the first or second week in May: the earliest date I find for him is the 2nd of May, 1851. He is the most perfect of our migratory songsters, and might most aptly be called the 'Irish mocking-bird,' as, hidden in some brake of briars or bunch of reeds, he pours forth a mingled imitation of the songs of almost all our other warblers, mixed with his own harsh song. Two years ago a bird of this species frequented Donnybrook, which closely imitated the blackbird, whitethroat, wagtail, titlark and bunting. He almost always sings in the closest retirement; and his melodious strains are not confined to the day-time, but may also be heard during the stillness of our summer and autumn nights. The latest date I have heard him was on the 5th of September, 1851.

"This ends all I have been able to collect concerning the songsters of Donnybrook individually. The only other songsters I have met with are the goldfinch, which only occasionally visits Donnybrook, or at least those parts to which I have access: I have however heard him singing in August and September in the counties Kilkenny and Waterford, and in early spring about the brakes of Ballinascorney. The bulfinch has only occurred to me once in Donnybrook, and then in the depth of winter. The ring ousel I have heard singing in May, at Lough Bray, county Wicklow; the song harsh, short, and delivered from the top of a rock: I never met with them in the county Dublin save once, in a stream-glen in the hills between Killakee and Dundrum. The redwing and fieldfare, although recording here in early spring, I have never heard singing."

In the second portion of his paper Mr. Kinahan made some remarks on the natural and other causes which appear to control and influence the duration of the song of birds, which he prefaced by a few observations on various irregularities in their manner and time of singing. These he classed under three heads, giving examples of each from his note-book:—1. Night-warblers, including the sedge-warbler, robin, song-thrush, blackbird, dipper and chaffinch. 2. Birds whose females sing, including the skylark and titlark. 3. Birds which sometimes sing with closed mandibles, as the robin and lesser willow-wren. The positions chosen by birds while singing were next noticed, as well as the periods of the day when they commence their song, all which appear to vary greatly according to season and the state of the weather; but as a general rule, however, he finds that "birds sing oftener and more regularly in the evening in the spring and autumn than in either summer or winter." To prove that no month is utterly songless, Mr. Kinahan gives the following analysis, showing the number of birds out of the total of forty-one songsters that he has heard singing in each month in Ireland:—January, 16; February, 25; March, 32 (including two summer visitants); April, 37 (summer visitants 7); May, 39 (summer visitants 8); June, 38 (summer visitants 9); July, 18 (8 of which were summer visitants); August, 14 (summer visitants 3); September, 8 (summer migrants 3); October, 9 (summer visitant 1); November, 10 (3 very regular); December, 11. After adverting to the influence of the weather, and the abundance or scarcity of food as tending to regulate the commencement and continuance of the song of birds, Mr. Kinahan thus concludes his interesting paper:—

"That the song of birds was the language of love, and as such only to be heard during the pairing season, is an old theory, but not the less incorrect for its age, as, indeed, the foregoing notes have amply shown; for out of many species which we find singing after July, but three, or four at most, build second nests. I believe myself that song is mainly, if not entirely, dependant on a joyousness and lightness of spirit, whether produced from genial weather, abundance of food, love, or any other cause; and, in fact, that a bird sings under the influence of the same natural impulse as that which causes the yelping of the gambolling pup, or the whistle of the idle schoolboy. Witness birds in confinement; supply them with sufficiency of warmth and light, and you may have them singing at any period of the year, and by day or night; the thrush singing as clearly and sweetly by the glare of the gas lamp as in the bright sunshine."

19 JY 53

Occurrence of Psecadia Funerella in Yorkshire.—Both this summer and the last I obtained Psecadia Funerella at Richmond, Yorkshire, but not in any number. I it out of hazel on both occasions.—*John Sang; Darlington, June* 23, 1853.

Occurrence of Hypercallia Christiernini at Castle Eden. — The year before last, t the end of June, I was fortunate enough to capture a fine specimen of Hyper-a Christiernini in Shotton Dean, Castle Eden. It was beaten out of grass on an sed hill-side. I have since been unable to meet with it.—*Id.*

The Rev. G. F. Dawson's 'Geodephaga Britannica.'

Taking a great interest in this undertaking, I beg to lay before my readers the wing note just received from Mr. Dawson; and I sincerely hope that they will le the Rev. gentleman to carry out his design by becoming subscribers to his .—*E. N.*]

The Woodlands, near Bedford,
June 20, 1853.

Dear Sir,

I send you some particulars of my 'Monograph of the British Geode-ga (if, indeed, it deserves to be so called), as you were so obliging as to express nterest in it. It is not, however, strictly speaking, a Monograph, although every ies is described, but more in the style of Dejean's 'Species Générales;' and I simply called it 'Geodephaga Britannica.' It will comprise the whole of the dephagous insects indigenous to Great Britain and Ireland, every species being ribed from actual specimens, including several hitherto unrecorded, with syno-es, localities, &c., and figures in outline of the distinctions of those species which more difficult of determination, in consequence of their near resemblance to each r. I did think also of adding a couple of plates of coloured figures of closely al-species.

Publishers appear reluctant to undertake it; and looking forward to publishing at own risk, I have been advised by the Members of the Entomological Society to e it known through the 'Zoologist,' by a short statement of the intention and style e work, as set forth above; adding also that the work will be published as soon 00 copies are subscribed for.

The work will occupy about 15 or 16 sheets of letter-press, or about 240 or 250 s, in 8vo., and I suppose the price will be from 7s. 6d. to 10s., according to the ber of figures. Such is an outline of my plan, which you will readily understand. work was undertaken solely at the request of my entomological correspondents, having been proceeded with so far, it seems a pity to abandon it.

Yours very truly,

J. F. Dawson.

Kirby Society. — I hope Mr. Bree will not lose sight of the establishment of this iety (Zool. 3799). I shall be happy to subscribe, and do all in my humble power ssist. I approve also of the name, revering as I do the memory of the late Hono-President of the Entomological Society. — *John Garland; Dorchester, June* 20, 3.

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To Contributors.—Communications have been received from Philip Lutley Sclater, E. C. Buxton, jun., T. Catchpool, jun., H. Harpur Crewe, John Garland, H. Stephenson, and James Bramley, Esqs., the Society of British Entomologists, and the Dublin Natural History Society.

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